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(71) Applicant
Josef Petr Prokopius
9 Compton Road, Wendover, Bucks HP22 6HR,
United Kingdom

(72) Inventor
Josef Petr Prokopius

(74) Agent and/or Address for Service
Josef Petr Prokopius
9 Compton Road, Wendover, Bucks HP22 6HR,
United Kingdom

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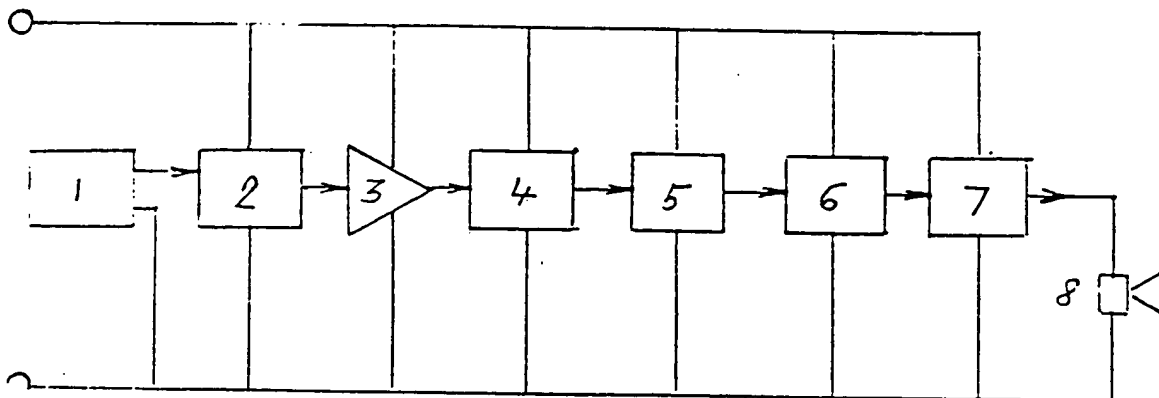
(56) Documents cited
GB 2192460 A

(58) Field of search
UK CL (Edition K) **G1N NEAA NENR**
INT CL⁵ **A61B 5/08**

(54) **Breathing detector**

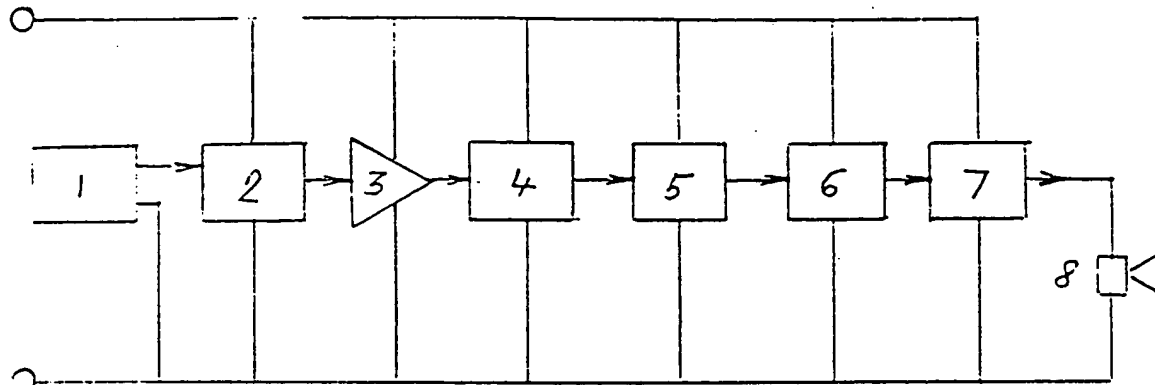
(57) A breathing detector comprises a detector mat (1) housing an electronic transducer, e.g. a piezo device, which provides an analogue electrical signal when deflected by breathing movements. The signal is amplified and fed to a Schmitt trigger (4) to produce a digital signal for triggering a retriggerable timer (5). If movement is not detected on the detector mat (1) within several seconds, the timer is not retriggered and provides an output to an astable multivibrator (6) to activate an audible or visible alarm device (8).

- Figure 1 -



GB 2 252 827 A

- Figure 1 -



Title:- BREATHING DETECTOR

Technical Field:- The present invention relates to medical electronic instruments, in particular to monitoring of breathing and physical movement of human body especially of infants as to avoid a cot death.

Background Art:- At present there are in use a variety of very sophisticated instruments for monitoring heart beat and breathing. They are very expensive instruments requiring fully qualified personnel to operate them.

Presented Art:- This invention introduces a simple to operate and economical to produce breathing monitoring device which detects any tiny movement of human body resulting from breathing. When movement is not detected for several seconds, the audible alarm incorporated in this instrument is set up and gives a loud alternating audible warning, so that help can be administered. The device consists of a movement detector mat inserted under the bed sheet and connection to the electronic signal processing unit in a box which houses the electronic circuits and audible or visible device to produce the alarm.

- 1 Transducer(detector mat)
- 2 Signal conditioning
- 3 Amplifier
- 4 Schmitt trigger
- 5 Monostable multivibrator (timer)
- 6 Astable multivibrator
- 7 Power stage
- 8 Piezo sounder (audible warning device)

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawing in which:-

Figure 1 shows a block diagram of the said breathing detector.

A breathing detector consisting of a detector mat (1), signal processing unit (2), amplifier (3), Schmitt trigger (4), retriggerable timer (5), astable multivibrator (6), power output stage (7) and audible or visible warning device (8).

The detector mat (1) is housing an electronic transducer as for example piezo device changing physical movement or deflection into analogue electrical signal, the said analogue electrical signal being fed into signal processing unit (2) then fed into amplifier stage (3) which amplifies the signal, further fed into Schmitt trigger stage (4) which changes the analogue electrical signal into a digital signal, the digital signal further triggering the retriggerable

timer (5) which is being constantly re-triggered by incoming signal from detector mat (1) providing the physical movement or deflection is being perceived to detector mat (1), the said retriggerable timer (5) providing in this condition no output to next stage into astable multivibrator (6). If physical movement or deflection on detector mat (1) is being terminated for pre-set period of time, the retriggerable timer (5) changes its output and provides signal to the said astable multivibrator (6) which in this condition switches on the audible or visible warning device (8) through the power stage (7) and alarm condition is being provided by this device by means of audible or visible alarm.

CLAIMS :

1. A breathing detector consisting of a detector mat housing an electronic transducer, the electronic transducer providing an analogue electrical signal when movement or deflection on the said mat is being detected, the analogue electrical signal being fed into an amplifier stage through signal processing stage, the amplifier which amplifies the said analogue electrical signal to a level necessary for further processing and the said processed signal fed into Schmitt trigger which changes the said analogue electrical signal into a digital signal which is further fed into a retriggerable timer.

2. A breathing detector as claimed in Claim 1 where the said retriggerable timer is providing no electrical signal output to the next stage of astable multivibrator if constantly retriggered by incoming signal when movement or deflection on the said detector mat is registered within a pre-set delay period of time of the said retriggerable timer.

3. A breathing detector as claimed in Claim 1 and Claim

2 where the said retriggerable timer provides electrical output signal to next stage of astable multivibrator if movement or deflection on the said detector mat is not registered within the pre-set delay period of time of the said retriggerable timer, the said electrical output signal from the said retriggerable timer actuates the said next stage of astable multivibrator and provides through power stage electrical output signal to the audible or visible warning device.

4. A breathing detector as claimed in any preceding Claim consisting of the detector mat accommodating an electronic transducer, the signal processing stage, the amplifier stage, the Schmitt trigger stage, the retriggerable timer, the astable multivibrator, the power stage and the warning device.

5. A breathing detector as claimed in any preceding Claim accommodating the said transducer in the said detector mat, where the transducer providing analogue electrical signal is in a form of piezo wire or piezo film.

6. A breathing detector as claimed in any preceding Claim where the warning device is a form of audible device.

7. A breathing detector as claimed in any preceding Claim where the warning device is in a form of visible device.

8. A breathing detector as claimed in any preceding Claim where the warning device is a combination of audible and visible devices.

9. A breathing detector as substantially described and illustrated on accompanying block diagram.

Section 17 (The Search Report)

Relevant Technical fields

(i) UK Cl (Edition K) G1N (NEAA, NENR)

(ii) Int Cl (Edition 5) A61B 5/08

Databases (see over)

(i) UK Patent Office

(ii)

Search Examiner

R S CLARK

Date of Search

24 MAY 1991

Documents considered relevant following a search in respect of claims

1 to 9

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2192460 J K MILLINS	1 to 8

SF2(p)

ME2ABV

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

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&: Member of the same patent family, corresponding document.

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